

Improving Safety and Cutting Costs through Integrated Safety Management



Lawrence Livermore National Laboratory (LLNL) presents five posters that show how we use Integrated Safety Management (ISM) to improve safety throughout the Laboratory while cutting costs. LLNL has the infrastructure in place to support researchers, facility personnel, and line managers during all stages of ISM—from work-planning, to identifying applicable hazards, to tailoring the controls to the work activity. The environment, safety, and health (ES&H) teams and occupational medical clinicians, represented in two of the posters, are an integral part of this infrastructure. LLNL has developed and implemented a comprehensive and integrated work control process called an electronic integration work sheet (IWS), which is presented in our third poster. The electronic IWS is designed to clearly define work, management responsibilities, and hazards. It includes references and provides an effective mechanism to certify that hazard controls are in place before starting work activities. Remarkable success has been achieved. The ergonomics poster tells about an organizational ISM success on a particularly problematic injury issue, and the NIF poster presents an impressive ISM success in a major project. Both were enabled by the ISM infrastructure. The following text describes each poster and its message.

Teaming Up for ES&H

The ES&H team concept at LLNL is an effective mechanism for integrating ES&H support and hazards control into programmatic activities. Five ES&H teams provide integrated, high-quality ES&H support to Laboratory researchers, facility personnel, and line managers to ensure a safe and healthy workplace. Each of the five teams services specific program areas within the Laboratory, and each team consists of ES&H professionals from the Hazards Control, Environmental Protection, and Health Services departments. Each team's duties include workplace inspections, IWS review, ES&H technical support, new facility design reviews, accident and injury follow-up, ES&H procedure production and review, and acquisition of environmental permits. DOE's Office of Independent Oversight and Performance Assurance (OA) inspection of ES&H and emergency management stated that, "The ES&H Team concept is a mature process that is effectively implemented. As implemented at LLNL, the ES&H Team concept ensures that line management has ultimate responsibility for safety, in accordance with ISM principles...OA team observations indicated that the ES&H Team is a major contributor to the safety-conscious approach to work at LLNL."

Integrating Occupational Medicine into ISM

The activities of LLNL's occupational medicine program map easily into the five functions of ISM. Medical evaluations help to assess the ability of workers to perform certain jobs safely. Occupational medicine professionals make worksite visits to contribute to the assessment of toxicological, ergonomic, and other hazards. Effective injury care, well-designed work restrictions, and disability case management contribute to productivity and cost-containment. Medical surveillance exams provide important assurances and feedback regarding the effectiveness of controls.

Through ISM, LLNL has made occupational medicine services more accessible to managers and supervisors. Hazards evaluations begin with an IWS in which researchers identify the need for medical surveillance. Occupational medicine professionals (physicians, nurses, and physical therapists) coordinate activities with the ES&H teams and communicate work restrictions to supervisors and employees. Disability management also follows the ISM model by using return-to-work coordinators in each LLNL directorate. The LLNL *ES&H Manual* and ISM program descriptions delineate the occupational medicine role in ISM, and a line manager's self-assessment that includes occupational medicine responsibilities is currently being developed. Using the ISM approach, LLNL's occupational medicine program has reduced lost workdays/injury, constrained workers compensation costs, and contributed to effective prevention.

LLNL's Integration Work Sheet Process

LLNL's ISM review and authorization process for proposed work activities uses IWSs and safety plans. Work that involves activities other than work "commonly performed by the public" (for example, driving a car and office work) requires an IWS to be prepared. Higher risk activities include the addition of a safety plan to supplement the IWS information.

For each work activity, the IWS documents the scope of work, work locations, hazards, controls, personnel working on the project, required training, medical surveillance, permits, and other required documentation.

An electronic IWS has been developed to facilitate and streamline this process. As a Web-based application, an electronic IWS allows LLNL workers and managers to document the planned work and safety requirements, including medical surveillance, while adding the data to a database that is searchable by location, hazard, or person. Identified training requirements are uploaded to each person's training plan, as required by the IWS, and email notifications are sent. The review, concurrence, and authorization process is handled via email, thereby expediting the IWS process.

Integrating Grassroots Ergonomics in the Workplace Supports the ISM Objective

In the Environmental Protection Department (EPD) at LLNL, computer users were experiencing musculoskeletal disorders (MSDs), that resulted in 134 lost and restricted workdays in 1997. EPD's newly formed Safety Advisory Committee initiated an EPD-wide ergonomics campaign to raise employee awareness of MSDs and to improve ergonomic working conditions in the department. This grassroots committee of employees and managers collaborated with LLNL's Health Services Department and Hazards Control Department to develop a computer workstation ergonomic evaluation program.

By 1999, lost and restricted workdays from MSDs were reduced to zero. The DOE cost index attributable to computer-workstation MSDs went from 9.54 in 1997 to zero over the past four years. By addressing ergonomics concerns in the workplace, EPD has also experienced a dramatic decline in the overall total recordable case rate, from 9.36 in 1997 to 1.27 in 2002.

In addition to computer workstation evaluations, the Safety Advisory Committee expanded its focus to aid hazardous waste technicians concerned about MSDs to their lower backs from manipulation of heavy, cumbersome waste containers. In 1996, this group had 126 lost and restricted workdays from lower-back MSDs. A materials handling back-care intervention program was initiated, and employee volunteers examined their own tasks and identified the risks. Solutions were identified and a program of ergonomic interventions and training was developed. The results have been positive—no lost or restricted workdays resulting from lower back MSDs attributed to waste-handling activities in the past twenty-six months.

Continuous Safety Improvement Works at the National Ignition Facility

Workers free from injury, improved productivity, on-time delivery, and national safety recognition are the results of a successful continuous safety improvement program at the 2.25 billion dollar National Ignition Facility (NIF) project at LLNL.

Continuous safety improvement starts at the top with the NIF management vision and commitment that places safety as the most important goal and activity of the NIF project. It is the policy of NIF that, "No activity shall be undertaken that compromises individual safety or that of fellow workers. The prevention of work-related injuries and illness is given precedence over all other activities."

The NIF team has taken a proactive leadership stance in safety improvements based on ISM principles. Clearly stated objectives, well-communicated expectations, training, a disciplined work review and authorization process, "walk-the-talk" field involvement, fully involved workers, and feedback and improvement are key components of the continuous safety improvement process.

NIF workers are committed to building and commissioning the NIF in a safe manner. The last lost workday injury was nearly two years ago and, in over 2,500,000 work hours, not a single worker has lost work due to an injury. The NIF total recordable rate of 1.5 (down from 1.68 last year) is a safety record far better than average for this type of work. Workers on the job now enjoy improved productivity and on-time delivery, leading to reduced costs. There are other benefits as well. Individuals and work teams are in a safety recognition program. The NIF received the nationally recognized and significant National Safety Council "Perfect Year" award and, recently, the Construction User Roundtable Safety Excellence award. Best of all, the NIF workers are leaving the site to be with family and friends free from injury. Continuous safety improvement works, and the NIF team will continue toward their work motto—Goal is Zero.

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